

79. An array of proteins according to claim 77, wherein each different protein binds to a different cell type.
80. The array of proteins according to claim 79, wherein the proteins are monoclonal antibodies.
81. An array of oligonucleotides according to claim 77, wherein the oligonucleotides are DNA or RNA.
82. The array according to claim 76, wherein the substrate is a semiconductor.
83. The array according to claim 76, wherein the substrate is an electrode.
84. The array according to claim 76, wherein the chemical or physical characteristic is a chemical tag.
85. The array according to claim 84, wherein the chemical tag is capable of being interrogated optically.
86. The array according to claim 76, wherein the particles are affixed to the substrate by chemical bonding.
87. The array according to claim 76, wherein the particles are all exposed to an aliquot of liquid containing an analyte.
88. The array according to claim 87, wherein the ligands are capable of hybridizing to analytes contained within the liquid volume.
89. Several arrays of several different proteins arranged on a substrate, wherein different ligands are attached to different particles and said particles are encoded

with a chemical or physical characteristic that identifies the ligand attached thereto, and wherein said particles are arranged on a substrate in a planar, defined configuration and wherein said particles are affixed to said substrate, and wherein the location of each array on said substrate indicates the types of ligands located therein.

90. The array of proteins according to claim 89, wherein the array is prepared by the following steps:

providing a multiplicity of reservoirs arranged in a predetermined layout, wherein each of said reservoirs has a known position within the layout and contains a suspension of a plurality of different particles having a different ligand attached thereto, and each of said particles being encoded with a chemical or physical characteristic that identifies said particle type and ligand attached thereto, and wherein the known positions of the reservoirs within the layout indicate the types of particles contained therein; and

transferring said suspensions of particles from the reservoirs onto a substrate in a layout- preserving manner and forming a multiplicity of planar particle arrays on said substrate, such that the particle types of each particle array are identical to the particle types of the corresponding reservoir and the position of each of the particle arrays on said substrate correlates with the position of the corresponding reservoir.

91. A method of multiplexed assaying for analytes capable of binding to an array of ligands, comprising:

providing an array of several different ligands, wherein different ligands are attached to different particles and said particles are encoded with a chemical or physical characteristic that identifies the ligand attached thereto,

arranging said particles on the substrate in a planar, defined configuration;

affixing said particles to said substrate;

contacting said particles with a fluid sample containing the analytes;

determining binding of the ligands to the analytes; and

decoding by determining the chemical or physical characteristics of particular particles, and hence of the attached ligands which bind to analytes in the sample.

92. The method of claim 91 wherein the ligands are proteins or oligonucleotides.

93. The method of claim 92 wherein the proteins are monoclonal antibodies.

94. The method of claim 92 wherein the ligands are proteins and each different protein binds to a different cell type.

95. The method of claim 92 wherein the oligonucleotides are DNA or RNA.

96. The method of claim 91 wherein the characteristic is a fluorescent tag which can be detected using a microscope.

97. The method of claim 92 wherein the determining of binding is accomplished by using a detection antibody which binds to the ligand-protein complex.

98. The method of claim 97 wherein the detection antibody is fluorescence labeled.

99. The method of claim 91 wherein determination of binding is accomplished by recording an optical signature indicating binding of the ligands and analytes.

100. The method of claim 99 wherein the optical signature is a fluorescence signal.

101. A method of performing a protein assay using at least one array of particles, comprising:

providing a planar array wherein a plurality of types particles are arranged on a substrate in a defined configuration and permanently anchored to said substrate, and wherein said particle types are differentiated by the protein molecule attached thereto and are encoded with a chemical or physical characteristic that identifies said particle type and protein attached thereto;

contacting said array of particles with a solution that may contain one or more types of analytes such that, if the analytes are present in said solution, said analytes form paired entities with the corresponding proteins of said particles;

detecting said paired entities; and

identifying said chemical or physical characteristics of each particle type.

102. The method of claim 101 wherein the chemical or physical characteristic can be optically interrogated.

103. The method of claim 101 wherein the entire array is exposed to the same aliquot of solution.

Respectfully Submitted,

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